



43

<110> Raghuram Kalluri

<120> ANTI-ANGIOGENIC PROTEINS AND FRAGMENTS
AND METHODS OF USE THEREOF

<130> 1440.1027-016

<140> US 10/032,221

<141> 2001-12-21

<150> PCT/US01/00565

<151> 2001-01-08

<150> US 09/543,371

<151> 2000-04-04

<150> US 09/335,224

<151> 1999-06-17

<150> US 60/126,175

<151> 1999-03-25

<150> US 60/089,689

<151> 1998-06-17

<150> US 09/479,118

<151> 2000-01-07

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<151> 2000-07-21

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<221> CDS

<222> (1) ... (687)

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1				5					10					15		

gac cca cag tgt cct tct ggg acc aaa att ctt tac cac ggg tac tct 96
Asp Pro Gln Cys Pro Ser Gly Thr Lys Ile Leu Tyr His Gly Tyr Ser
20 25 30

ttg	ctc	tac	gtg	caa	ggc	aat	gaa	cgg	gcc	cat	gga	cag	gac	ttg	ggc	144
Leu	Leu	Tyr	Val	Gln	Gly	Asn	Glu	Arg	Ala	His	Gly	Gln	Asp	Leu	Gly	
		35					40					45				

acg gcc ggc agc tgc ctg cgc aag ttc agc aca atg ccc ttc ctg ttc 192
 Thr Ala Gly Ser Cys Leu Arg Lys Phe Ser Thr Met Pro Phe Leu Phe
 50 55 60

tgc aat att aac aac gtg tgc aac ttt gca tca cga aat gac tac tcg 240
 Cys Asn Ile Asn Asn Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser
 65 70 75 80

tac tgg ctg tcc acc cct gag ccc atg ccc atg tca atg gca ccc atc 288
 Tyr Trp Leu Ser Thr Pro Glu Pro Met Pro Met Ser Met Ala Pro Ile
 85 90 95

acg ggg gaa aac ata aga cca ttt att agt agg tgt gct gtg tgt gag 336
 Thr Gly Glu Asn Ile Arg Pro Phe Ile Ser Arg Cys Ala Val Cys Glu
 100 105 110

gcg cct gcc atg gtg atg gcc gtg cac agc cag acc att cag atc cca 384
 Ala Pro Ala Met Val Met Ala Val His Ser Gln Thr Ile Gln Ile Pro
 115 120 125

ccg tgc ccc agc ggg tgg tcc tcg ctg tgg atc ggc tac tct ttt gtg 432
 Pro Cys Pro Ser Gly Trp Ser Ser Leu Trp Ile Gly Tyr Ser Phe Val
 130 135 140

atg cac acc agc gct ggt gca gaa ggc tct ggc caa gcc ctg gcg tcc 480
 Met His Thr Ser Ala Gly Ala Glu Gly Ser Gly Gln Ala Leu Ala Ser
 145 150 155 160

ccc ggc tcc tgc ctg gag gag ttt aga agt gcg cca ttc atc gag tgt 528
 Pro Gly Ser Cys Leu Glu Glu Phe Arg Ser Ala Pro Phe Ile Glu Cys
 165 170 175

cac ggc cgt ggg acc tgc aat tac tac gca aac gct tac agc ttt tgg 576
 His Gly Arg Gly Thr Cys Asn Tyr Tyr Ala Asn Ala Tyr Ser Phe Trp
 180 185 190

ctc gcc acc ata gag agg agc gag atg ttc aag aag cct acg ccg tcc 624
 Leu Ala Thr Ile Glu Arg Ser Glu Met Phe Lys Lys Pro Thr Pro Ser
 195 200 205

acc ttg aag gca ggg gag ctg cgc acg cac gtc agc cgc tgc caa gtc 672
 Thr Leu Lys Ala Gly Glu Leu Arg Thr His Val Ser Arg Cys Gln Val
 210 215 220

tgt atg aga aga aca taa 690
 Cys Met Arg Arg Thr
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<210> 2

<211> 229

<212> PRT

<213> Homo sapiens

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Ser Val Asp His Gly Phe Leu Val Thr Arg His Ser Gln Thr Ile Asp
 1 5 10 15

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		20						25					30		
Leu	Leu	Tyr	Val	Gln	Gly	Asn	Glu	Arg	Ala	His	Gly	Gln	Asp	Leu	Gly
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Thr	Ala	Gly	Ser	Cys	Leu	Arg	Lys	Phe	Ser	Thr	Met	Pro	Phe	Leu	Phe
		50				55					60				
Cys	Asn	Ile	Asn	Asn	Val	Cys	Asn	Phe	Ala	Ser	Arg	Asn	Asp	Tyr	Ser
65					70					75				80	
Tyr	Trp	Leu	Ser	Thr	Pro	Glu	Pro	Met	Pro	Met	Ser	Met	Ala	Pro	Ile
			85						90					95	
Thr	Gly	Glu	Asn	Ile	Arg	Pro	Phe	Ile	Ser	Arg	Cys	Ala	Val	Cys	Glu
			100					105					110		
Ala	Pro	Ala	Met	Val	Met	Ala	Val	His	Ser	Gln	Thr	Ile	Gln	Ile	Pro
		115					120					125			
Pro	Cys	Pro	Ser	Gly	Trp	Ser	Ser	Leu	Trp	Ile	Gly	Tyr	Ser	Phe	Val
		130				135					140				
Met	His	Thr	Ser	Ala	Gly	Ala	Glu	Gly	Ser	Gly	Gln	Ala	Leu	Ala	Ser
145					150					155					160
Pro	Gly	Ser	Cys	Leu	Glu	Glu	Phe	Arg	Ser	Ala	Pro	Phe	Ile	Glu	Cys
			165					170						175	
His	Gly	Arg	Gly	Thr	Cys	Asn	Tyr	Tyr	Ala	Asn	Ala	Tyr	Ser	Phe	Trp
			180					185					190		
Leu	Ala	Thr	Ile	Glu	Arg	Ser	Glu	Met	Phe	Lys	Lys	Pro	Thr	Pro	Ser
		195					200					205			
Thr	Leu	Lys	Ala	Gly	Glu	Leu	Arg	Thr	His	Val	Ser	Arg	Cys	Gln	Val
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<220>
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 <213> Homo sapiens

<220>
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 <222> (1)...(681)

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  1             5             10             15

ccc atg tgc ccg gtg ggc atg aac aaa ctc tgg agt gga tac agc ctg      96
Pro Met Cys Pro Val Gly Met Asn Lys Leu Trp Ser Gly Tyr Ser Leu
          20             25             30

ctg tac ttc gag ggc cag gag aag gcg cac aac cag gac ctg ggg ctg      144
Leu Tyr Phe Glu Gly Gln Glu Lys Ala His Asn Gln Asp Leu Gly Leu
          35             40             45

gcg ggc tcc tgc ctg gcg cgg ttc agc acc atg ccc ttc ctg tac tgc      192
Ala Gly Ser Cys Leu Ala Arg Phe Ser Thr Met Pro Phe Leu Tyr Cys
          50             55             60

aac cct ggt gat gtc tgc tac tat gcc agc cgg aac gac aag tcc tac      240
Asn Pro Gly Asp Val Cys Tyr Tyr Ala Ser Arg Asn Asp Lys Ser Tyr
          65             70             75

tgg ctc tct acc act gcg ccg ctg ccc atg atg ccc gtg gcc gag gac      288
Trp Leu Ser Thr Thr Ala Pro Leu Pro Met Met Pro Val Ala Glu Asp
          85             90             95

gag atc aag ccc tac atc agc cgc tgt tct gtg tgt gag gcc ccg gcc      336
Glu Ile Lys Pro Tyr Ile Ser Arg Cys Ser Val Cys Glu Ala Pro Ala
          100            105            110

atc gcc atc gcg gtc cac agt cag gat gtc tcc atc cca cac tgc cca      384
Ile Ala Ile Ala Val His Ser Gln Asp Val Ser Ile Pro His Cys Pro
          115            120            125

gct ggg tgg cgg agt ttg tgg atc gga tat tcc ttc ctc atg cac acg      432
Ala Gly Trp Arg Ser Leu Trp Ile Gly Tyr Ser Phe Leu Met His Thr
          130            135            140

gcg gcg gga gac gaa ggc ggt ggc caa tca ctg gtg tca ccg ggc agc      480
Ala Ala Gly Asp Glu Gly Gly Gly Gln Ser Leu Val Ser Pro Gly Ser
          145            150            155            160

tgt cta gag gac ttc cgc gcc aca cca ttc atc gaa tgc aat gga ggc      528
Cys Leu Glu Asp Phe Arg Ala Thr Pro Phe Ile Glu Cys Asn Gly Gly
          165            170            175

cgc ggc acc tgc cac tac tac gcc aac aag tac agc ttc tgg ctg acc      576
Arg Gly Thr Cys His Tyr Tyr Ala Asn Lys Tyr Ser Phe Trp Leu Thr
          180            185            190

acc att ccc gag cag agc ttc cag ggc tcg ccc tcc gcc gac acg ctc      624
Thr Ile Pro Glu Gln Ser Phe Gln Gly Ser Pro Ser Ala Asp Thr Leu
          195            200            205

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aag gcc ggc ctc atc cgc aca cac atc agc cgc tgc cag gtg tgc atg 672
 Lys Ala Gly Leu Ile Arg Thr His Ile Ser Arg Cys Gln Val Cys Met
 210 215 220

aag aac ctg tga 684
 Lys Asn Leu
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<210> 6
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 <212> PRT
 <213> Homo sapiens

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 Pro Met Cys Pro Val Gly Met Asn Lys Leu Trp Ser Gly Tyr Ser Leu
 20 25 30
 Leu Tyr Phe Glu Gly Gln Glu Lys Ala His Asn Gln Asp Leu Gly Leu
 35 40 45
 Ala Gly Ser Cys Leu Ala Arg Phe Ser Thr Met Pro Phe Leu Tyr Cys
 50 55 60
 Asn Pro Gly Asp Val Cys Tyr Tyr Ala Ser Arg Asn Asp Lys Ser Tyr
 65 70 75 80
 Trp Leu Ser Thr Thr Ala Pro Leu Pro Met Met Pro Val Ala Glu Asp
 85 90 95
 Glu Ile Lys Pro Tyr Ile Ser Arg Cys Ser Val Cys Glu Ala Pro Ala
 100 105 110
 Ile Ala Ile Ala Val His Ser Gln Asp Val Ser Ile Pro His Cys Pro
 115 120 125
 Ala Gly Trp Arg Ser Leu Trp Ile Gly Tyr Ser Phe Leu Met His Thr
 130 135 140
 Ala Ala Gly Asp Glu Gly Gly Gly Gln Ser Leu Val Ser Pro Gly Ser
 145 150 155 160
 Cys Leu Glu Asp Phe Arg Ala Thr Pro Phe Ile Glu Cys Asn Gly Gly
 165 170 175
 Arg Gly Thr Cys His Tyr Tyr Ala Asn Lys Tyr Ser Phe Trp Leu Thr
 180 185 190
 Thr Ile Pro Glu Gln Ser Phe Gln Gly Ser Pro Ser Ala Asp Thr Leu
 195 200 205
 Lys Ala Gly Leu Ile Arg Thr His Ile Ser Arg Cys Gln Val Cys Met
 210 215 220
 Lys Asn Leu
 225

<210> 7
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 <223> pET22b(+) forward oligonucleotide primer for
 Canstatin

<400> 7
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<210> 8
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 <213> Artificial Sequence

<220>
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 Canstatin

<400> 8
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<210> 9
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 <213> Homo sapiens

<220>
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 <222> (1)...(735)

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aca acg aga ggc ttt gtc ttc acc cga cac agt caa acc aca gca att 96
 Thr Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile
 20 25 30

cct tca tgt cca gag ggg aca gtg cca ctc tac agt ggg ttt tct ttt 144
 Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe
 35 40 45

ctt ttt gta caa gga aat caa cga gcc cac gga caa gac ctt gga act 192
 Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr
 50 55 60

ctt ggc agc tgc ctg cag cga ttt acc aca atg cca ttc tta ttc tgc 240
 Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys
 65 70 75 80

aat gtc aat gat gta tgt aat ttt gca tct cga aat gat tat tca tac 288
 Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr
 85 90 95

tgg ctg tca aca cca gct ctg atg cca atg aac atg gct ccc att act 336
 Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr
 100 105 110

ggc aga gcc ctt gag cct tat ata agc aga tgc act gtt tgt gaa ggt 384
 Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly
 115 120 125

cct gcg atc gcc ata gcc gtt cac agc caa acc act gac att cct cca 432
 Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro

130	135	140	
tgt cct cac ggc tgg att tct ctc tgg aaa gga ttt tca ttc atc atg			480
Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met			
145	150	155	160
ttc aca agt gca ggt tct gag ggc acc ggg caa gca ctg gcc tcc cct			528
Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro			
	165	170	175
ggc tcc tgc ctg gaa gaa ttc cga gcc agc cca ttt cta gaa tgt cat			576
Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His			
	180	185	190
gga aga gga acg tgc aac tac tat tca aat tcc tac agt ttc tgg ctg			624
Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu			
	195	200	205
gct tca tta aac cca gaa aga atg ttc aga aag cct att cca tca act			672
Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr			
	210	215	220
gtg aaa gct ggg gaa tta gaa aaa ata ata agt cgc tgt cag gtg tgc			720
Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys			
225	230	235	240
atg aag aaa aga cac tga			738
Met Lys Lys Arg His			
	245		

<210> 10

<211> 245

<212> PRT

<213> Homo sapiens

<400> 10

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	20	25	30
Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe			
	35	40	45
Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr			
	50	55	60
Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys			
65	70	75	80
Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr			
	85	90	95
Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr			
	100	105	110
Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly			
	115	120	125
Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro			
	130	135	140
Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met			
145	150	155	160
Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro			

				165					170					175			
Gly	Ser	Cys	Leu	Glu	Glu	Phe	Arg	Ala	Ser	Pro	Phe	Leu	Glu	Cys	His		
			180					185					190				
Gly	Arg	Gly	Thr	Cys	Asn	Tyr	Tyr	Ser	Asn	Ser	Tyr	Ser	Phe	Trp	Leu		
		195					200					205					
Ala	Ser	Leu	Asn	Pro	Glu	Arg	Met	Phe	Arg	Lys	Pro	Ile	Pro	Ser	Thr		
	210					215					220						
Val	Lys	Ala	Gly	Glu	Leu	Glu	Lys	Ile	Ile	Ser	Arg	Cys	Gln	Val	Cys		
225					230					235					240		
Met	Lys	Lys	Arg	His													
				245													

<210> 11
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<220>
 <223> pET22b(+) forward oligonucleotide primer for
 Tumstatin

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 cgggatccgg gtttgaaagg aaaacgt 27

<210> 12
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> pET22b(+) reverse oligonucleotide primer for
 Tumstatin

<400> 12
 cccaagcttt cagtgtcttt tcttcat 27

<210> 13
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Additional vector sequence added to protein

<400> 13
 Met Asp Ile Gly Ile Asn Ser Asp
 1 5

<210> 14
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Additional vector sequence added to protein

<400> 14

Lys Leu Ala Ala Ala Leu Glu
1 5

<210> 15

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> pPICZaA forward oligonucleotide primer for
Arresten

<400> 15

ttcgggaattc tctgttgatc acggcttc

28

<210> 16

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> pPICZaA reverse oligonucleotide primer for
Arresten

<400> 16

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<210> 17

<211> 31

<212> DNA

<213> Artificial Sequence

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<223> pPICZaA forward oligonucleotide primer for
Canstatin

<400> 17

ttcgggaattc gtcagcatcg gctacctcct g

31

<210> 18

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> pPICZaA reverse oligonucleotide primer for
Canstatin

<400> 18

gggggtacccc caggttcttc atgcacacct gg

32

<210> 19

<211> 244

<212> PRT

<213> Artificial Sequence

<220>

<223> Tumstatin (amino acids 1-244)

<400> 19

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Thr Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile
      20           25           30
Pro Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe
      35           40           45
Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr
      50           55           60
Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys
65           70           75           80
Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr
      85           90           95
Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr
      100          105          110
Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly
      115          120          125
Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro
      130          135          140
Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met
145          150          155          160
Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro
      165          170          175
Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His
      180          185          190
Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu
      195          200          205
Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr
      210          215          220
Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys
225          230          235          240
Met Lys Lys Arg
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<210> 20

<211> 124

<212> PRT

<213> Artificial Sequence

<220>

<223> Tumstatin 333 (amino acids 2-125 of SEQ ID NO:10)

<400> 20

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Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp Thr
 1           5           10           15
Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro
      20           25           30
Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu
      35           40           45
Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu
      50           55           60
Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn
65           70           75           80
Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp
      85           90           95
Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly
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100 105 110
 Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val
 115 120

<210> 21
 <211> 119
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Tumstatin 334 (amino acids 126-244 of SEQ ID
 NO:10)

<400> 21
 Cys Glu Gly Pro Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp
 1 5 10 15
 Ile Pro Pro Cys Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser
 20 25 30
 Phe Ile Met Phe Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu
 35 40 45
 Ala Ser Pro Gly Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu
 50 55 60
 Glu Cys His Gly Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser
 65 70 75 80
 Phe Trp Leu Ala Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile
 85 90 95
 Pro Ser Thr Val Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys
 100 105 110
 Gln Val Cys Met Lys Lys Arg
 115

<210> 22
 <211> 191
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Tum-1 (Tumstatin N53) (amino acids 54-244 of SEQ
 ID NO:10)

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 1 5 10 15
 Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val
 20 25 30
 Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser Thr Pro
 35 40 45
 Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg Ala Leu Glu
 50 55 60
 Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro Ala Ile Ala Ile
 65 70 75 80
 Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys Pro His Gly Trp
 85 90 95
 Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe Thr Ser Ala Gly
 100 105 110
 Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly Ser Cys Leu Glu
 115 120 125

Glu	Phe	Arg	Ala	Ser	Pro	Phe	Leu	Glu	Cys	His	Gly	Arg	Gly	Thr	Cys
130						135					140				
Asn	Tyr	Tyr	Ser	Asn	Ser	Tyr	Ser	Phe	Trp	Leu	Ala	Ser	Leu	Asn	Pro
145					150					155					160
Glu	Arg	Met	Phe	Arg	Lys	Pro	Ile	Pro	Ser	Thr	Val	Lys	Ala	Gly	Glu
			165						170					175	
Leu	Glu	Lys	Ile	Ile	Ser	Arg	Cys	Gln	Val	Cys	Met	Lys	Lys	Arg	
		180						185						190	

<210> 23

<211> 132

<212> PRT

<213> Artificial Sequence

<220>

<223> Tum-2 (amino acids 1-132 of SEQ ID NO:10)

<400> 23

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1			5					10						15	
Thr	Thr	Arg	Gly	Phe	Val	Phe	Thr	Arg	His	Ser	Gln	Thr	Thr	Ala	Ile
		20					25					30			
Pro	Ser	Cys	Pro	Glu	Gly	Thr	Val	Pro	Leu	Tyr	Ser	Gly	Phe	Ser	Phe
	35				40						45				
Leu	Phe	Val	Gln	Gly	Asn	Gln	Arg	Ala	His	Gly	Gln	Asp	Leu	Gly	Thr
50				55						60					
Leu	Gly	Ser	Cys	Leu	Gln	Arg	Phe	Thr	Thr	Met	Pro	Phe	Leu	Phe	Cys
65			70						75						80
Asn	Val	Asn	Asp	Val	Cys	Asn	Phe	Ala	Ser	Arg	Asn	Asp	Tyr	Ser	Tyr
		85						90					95		
Trp	Leu	Ser	Thr	Pro	Ala	Leu	Met	Pro	Met	Asn	Met	Ala	Pro	Ile	Thr
		100					105						110		
Gly	Arg	Ala	Leu	Glu	Pro	Tyr	Ile	Ser	Arg	Cys	Thr	Val	Cys	Glu	Gly
	115					120						125			
Pro	Ala	Ile	Ala												
130															

<210> 24

<211> 112

<212> PRT

<213> Artificial Sequence

<220>

<223> Tum-3 (amino acids 133-244 of SEQ ID NO:10)

<400> 24

Ile	Ala	Val	His	Ser	Gln	Thr	Thr	Asp	Ile	Pro	Pro	Cys	Pro	His	Gly
1			5					10						15	
Trp	Ile	Ser	Leu	Trp	Lys	Gly	Phe	Ser	Phe	Ile	Met	Phe	Thr	Ser	Ala
		20					25					30			
Gly	Ser	Glu	Gly	Thr	Gly	Gln	Ala	Leu	Ala	Ser	Pro	Gly	Ser	Cys	Leu
	35				40						45				
Glu	Glu	Phe	Arg	Ala	Ser	Pro	Phe	Leu	Glu	Cys	His	Gly	Arg	Gly	Thr
50				55						60					
Cys	Asn	Tyr	Tyr	Ser	Asn	Ser	Tyr	Ser	Phe	Trp	Leu	Ala	Ser	Leu	Asn
65			70					75						80	
Pro	Glu	Arg	Met	Phe	Arg	Lys	Pro	Ile	Pro	Ser	Thr	Val	Lys	Ala	Gly

	85		90		95										
Glu	Leu	Glu	Lys	Ile	Ile	Ser	Arg	Cys	Gln	Val	Cys	Met	Lys	Lys	Arg
	100							105					110		

<210> 25
 <211> 64
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Tum-4 (amino acids 181-244 of SEQ ID NO:10)

Glu	Glu	Phe	Arg	Ala	Ser	Pro	Phe	Leu	Glu	Cys	His	Gly	Arg	Gly	Thr	
1				5				10						15		
Cys	Asn	Tyr	Tyr	Ser	Asn	Ser	Tyr	Ser	Phe	Trp	Leu	Ala	Ser	Leu	Asn	
			20					25					30			
Pro	Glu	Arg	Met	Phe	Arg	Lys	Pro	Ile	Pro	Ser	Thr	Val	Lys	Ala	Gly	
		35				40					45					
Glu	Leu	Glu	Lys	Ile	Ile	Ser	Arg	Cys	Gln	Val	Cys	Met	Lys	Lys	Arg	
50						55					60					

<210> 26
 <211> 79
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Tum-5 (amino acids 54-132 of SEQ ID NO:10)

Asn	Gln	Arg	Ala	His	Gly	Gln	Asp	Leu	Gly	Thr	Leu	Gly	Ser	Cys	Leu	
1				5				10						15		
Gln	Arg	Phe	Thr	Thr	Met	Pro	Phe	Leu	Phe	Cys	Asn	Val	Asn	Asp	Val	
			20					25					30			
Cys	Asn	Phe	Ala	Ser	Arg	Asn	Asp	Tyr	Ser	Tyr	Trp	Leu	Ser	Thr	Pro	
		35				40					45					
Ala	Leu	Met	Pro	Met	Asn	Met	Ala	Pro	Ile	Thr	Gly	Arg	Ala	Leu	Glu	
50					55						60					
Pro	Tyr	Ile	Ser	Arg	Cys	Thr	Val	Cys	Glu	Gly	Pro	Ala	Ile	Ala		
65					70					75						

<210> 27
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> T1 (amino acids 1-20 of SEQ ID NO:10)

Pro	Gly	Leu	Lys	Gly	Lys	Arg	Gly	Asp	Ser	Gly	Ser	Pro	Ala	Thr	Trp	
1			5					10						15		
Thr	Thr	Arg	Gly													
			20													

<210> 28

<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> T2 (amino acids 54-73 of SEQ ID NO:10)

<400> 28
Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu Gly Ser Cys Leu
1 5 10 15
Gln Arg Phe Thr
20

<210> 29
<211> 20

<212> PRT
<213> Artificial Sequence

<220>
<223> T3 (amino acids 69-88 of SEQ ID NO:10)

<400> 29
Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp
1 5 10 15
Val Cys Asn Phe
20

<210> 30
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> T4 (amino acids 84-103 of SEQ ID NO:10)

<400> 30
Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu Ser
1 5 10 15
Thr Pro Ala Leu
20

<210> 31
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> T5 (amino acids 99-117 of SEQ ID NO:10)

<400> 31
Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly Arg
1 5 10 15
Ala Leu Glu

<210> 32
<211> 19

<212> PRT
<213> Artificial Sequence

<220>
<223> T6 (amino acids 114-132 of SEQ ID NO:10)

<400> 32
Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro
1 5 10 15
Ala Ile Ala

<210> 33
<211> 88
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin-45-132 (amino acids 45-132 of SEQ ID
NO:10)

<400> 33
Gly Phe Ser Phe Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln
1 5 10 15
Asp Leu Gly Thr Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro
20 25 30
Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn
35 40 45
Asp Tyr Ser Tyr Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met
50 55 60
Ala Pro Ile Thr Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr
65 70 75 80
Val Cys Glu Gly Pro Ala Ile Ala
85

<210> 34
<211> 88
<212> PRT
<213> Artificial Sequence

<220>
<223> Tumstatin-5-126-C-A (amino acids 45-132 of SEQ ID
NO:10; alanine has been substituted for the
cysteine residue at position 126 of the
full-length Tumstatin molecule)

<400> 34
Gly Phe Ser Phe Leu Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln
1 5 10 15
Asp Leu Gly Thr Leu Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro
20 25 30
Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn
35 40 45
Asp Tyr Ser Tyr Trp Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met
50 55 60
Ala Pro Ile Thr Gly Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr
65 70 75 80
Val Ala Glu Gly Pro Ala Ile Ala

<210> 35
 <211> 9
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic blocking peptide

<400> 35
 Cys Asp Cys Arg Gly Asp Cys Phe Cys
 1 5

<210> 36
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic blocking peptide

<400> 36
 Cys Asn Gly Arg Cys
 1 5

<210> 37
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> T7 (amino acids 74-98 of SEQ ID NO:10)

<400> 37
 Thr Met Pro Phe Leu Phe Cys Asn Val Asn Asp Val Cys Asn Phe Ala
 1 5 10 15
 Ser Arg Asn Asp Tyr Ser Tyr Trp Leu
 20 25

<210> 38
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> T7-mutant

<400> 38
 Thr Met Pro Phe Met Phe Cys Asn Ile Asn Asn Val Cys Asn Phe Ala
 1 5 10 15
 Ser Arg Asn Asp Tyr Ser Tyr Trp Leu
 20 25

<210> 39
 <211> 27
 <212> PRT

<213> Artificial Sequence

<220>

<223> T8 (amino acids 69-95 of SEQ ID NO:10; lysine has been substituted for the leucine residue at position 69 of the full-length Tumstatin molecule)

<400> 39

Lys	Gln	Arg	Phe	Thr	Thr	Met	Pro	Phe	Leu	Phe	Cys	Asn	Val	Asn	Asp
1				5					10					15	
Val	Cys	Asn	Phe	Ala	Ser	Arg	Asn	Asp	Tyr	Ser					
			20					25							

<210> 40

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> T8-3

<400> 40

Lys	Gln	Arg	Phe	Thr	Thr	Met	Pro	Phe	Leu	Phe	Ser	Asn	Val	Asn	Asp
1				5					10					15	
Val	Ser	Asn	Phe	Ala	Ser	Arg	Asn	Asp	Tyr	Ser					
			20					25							

<210> 41

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> TP3

<400> 41

Lys	Leu	Phe	Cys	Asn	Val	Asn	Cys	Val	Cys	Asn	Phe	Ala	Ser	Arg	Asn
1				5					10					15	
Asp	Tyr	Ser													

<210> 42

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> P2

<400> 42

Lys	Gln	Arg	Phe	Thr	Thr	Met	Pro	Phe	Leu	Phe	Asp	Asn	Val	Asn	Asp
1				5					10					15	
Val	Asp	Asn	Phe	Ala	Ser	Arg	Asn	Asp	Tyr	Ser					
			20					25							

<210> 43

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Scrambled peptide SP1

<400> 43

Ala	Asn	Met	Ser	Arg	Asn	Val	Phe	Phe	Asp	Cys	Thr	Ser	Phe	Pro	Val
1				5					10					15	
Cys	Gln	Lys	Phe	Leu	Asn	Asp	Thr	Arg	Asn	Tyr					
			20					25							

<210> 44

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Scrambled peptide SP2

<400> 44

Thr	Phe	Asn	Cys	Val	Lys	Asn	Tyr	Gln	Arg	Leu	Asp	Phe	Thr	Ser	Arg
1				5					10					15	
Phe	Val	Met	Asp	Ser	Cys	Ala	Asn	Phe	Pro	Asn					
			20					25							

<210> 45

<211> 41

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<223> X at position 1 to 17 is any amino acid

<223> X at position 2 is F or K

<223> X at position 5 is C, S or D

<223> X at position 9 is D or C

<223> X at position 11 is C, S or D

<223> X at position 14 is any amino acid

<400> 45

Xaa	Xaa	Leu	Phe	Xaa	Asn	Val	Asn	Xaa	Val	Xaa	Asn	Phe	Xaa
1				5					10				

<210> 46

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 46

Thr Thr Met Pro

1

<210> 47

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 47

Phe Thr Thr Met Pro

1

5

<210> 48

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 48

Arg Phe Thr Thr Met Pro

1

5

<210> 49

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 49

Gln Arg Phe Thr Thr Met Pro

1

5

<210> 50

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 50

Leu Gln Arg Phe Thr Thr Met Pro

1

5

<210> 51

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 51

Lys Gln Arg Phe Thr Thr Met Pro

1

5

<210> 52

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 52

Ala Ser Arg Asn

1

<210> 53

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 53

Ala Ser Arg Asn Asp

1

5

<210> 54

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 54

Ala Ser Arg Asn Asp Tyr

1

5

<210> 55

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Generic peptide

<400> 55

Ala Ser Arg Asn Asp Tyr Ser

1

5

<210> 56

<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 56
Ala Ser Arg Asn Asp Tyr Ser Tyr
1 5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 57
Ala Ser Arg Asn Asp Tyr Asp Tyr Trp
1 5

<210> 58
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Generic peptide

<400> 58
Ala Ser Arg Asn Asp Tyr Ser Tyr Trp Leu
1 5 10